

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Patent Application No. 10/564,920

Confirmation No. 5304

Applicant: Destura et al.

Filed: January 17, 2006

TC/AU: 2629

Examiner: Sitta, Grant

Docket No.: 259404 (Client Reference No. P80375US00)

Customer No.: 23460

APPELLANTS' APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In support of the appeal from the final rejection dated January 7, 2010,
Appellants now submit their Appeal Brief.

Real Party In Interest

The patent application that is the subject of this appeal is assigned to Polymer Vision Ltd.

Related Appeals and Interferences

There are no appeals or interferences that are related to this appeal.

Status of Claims

Claims 1, 2, 4 and 7-15 stand finally rejected, and these rejections are presently being appealed.

A complete listing of these claims appears in the Claims Appendix.

Status of Amendments

No amendments have been submitted after the final rejection.

Summary of Claimed Subject Matter

Claims 1, 2, 4 and 7-15, including independent claim 1, are pending. The summaries of the claims reference the specification and drawings filed with the priority PCT application on July 8, 2004.

Independent claim 1 pertains to a touch sensitive display (see, FIG. 1, Display 100). The display comprises an active matrix display element (see, FIGs 1 and 4 Element 101) having a viewer proximal side and a viewer distal side and comprising a pixel array with rows and columns of pixels. See, page 6, line 21 to page 7, line 9.

A touch sensitive element (Element 103) is disposed on the viewer distal side of the active matrix display element. See, page 7, lines 10-13. The touch sensitive element comprises a first conductive layer (Layer 113) with a first plurality of conductors and a second conductive layer (Layer 115) with a second plurality of conductors. See, page 7, lines 14-25.

The touch sensitive element further comprises a pressure sensitive layer (Layer 117) sandwiched between the first conductive layer and the second conductive layer and operable to modify an electrical conductivity between a first conductor of the first plurality of conductors and a second conductor of the second plurality of conductors in response to a pressure point resulting from an applied pressure. The first plurality of conductors are row conductors of the touch sensitive element and the second plurality of conductors are column conductors of the touch sensitive element. See, page 7, lines 14-34.

Claim 1 recites that each row of pixels shares a respective row buffer amplifier (see, FIG. 4, amplifier 309) with a touch sensitive element row conductor, and each column of pixels shares a respective column buffer amplifier (311) with a touch sensitive element column conductor. See, page 11, lines 13-19.

According to independent claim 1 each row/column of pixels has a corresponding buffer which is switched between the *display* row/column lines and the rows/columns of the *touch sensitive element* array. The buffers therefore support *dual functions* of acting as an interface between a single drive architecture and the *display*, or alternatively *touch sensor*, rows/columns.

The current claim 1 is related to the exemplary embodiment disclosed in Appellants' FIG. 4 and the written description at page 10, line 26 to page 11, line 31.

Dependent claim 2 recites the touch sensitive element (103) that comprises a plurality of pressure sensitive elements. See, page 8, lines 21-25.

Dependent claim 4 recites the plurality of pressure sensitive elements aligned with pixels of the active matrix display element (101). See, page 8, lines 21-25.

Dependent claim 7 recites the pressure sensitive layer (117) comprises a piezoelectric material operable to modify the electrical conductivity. See, Figs 1 and 2, page 7, lines 32-34, and page 9 lines 18-24.

Dependent claim 8 recites the pressure sensitive layer (117) that comprises Micro-ElectroMechanical (MEM) switches operable to modify the electrical conductivity. See, page 9, lines 25-34, and page 10, lines 1-2.

Dependent claim 9 recites detection means (309) operable to determine a position of the pressure point in response to the change in electrical conductivity between the first conductor and the second conductor. See, page, 10, lines 3-8; and FIG. 4, page 11, lines 23-31.

Dependent claim 10 recites the detection means, operable to detect a plurality of simultaneous pressure points. See, Fig. 4, page 11, lines 23-31.

Dependent claim 11 recites the detection means that comprise a signal source (309) for outputting a signal on the first conductor and a sense amplifier (311) coupled to the second conductor for detecting an electrical signal caused by an electrical conductivity being formed between the first conductor and the second conductor in response to the pressure point. See, FIG. 4, page 11, lines 23-31.

Dependent claim 12 recites the electrical signal is an electrical charge and the sense amplifier (311) is a charge sensitive amplifier. See, FIG. 4, page 11, lines 23-31.

Dependent claim 13 recites a display controller that uses the row buffer amplifier (309) to provide a display control signal in a display driver configuration. The touch sensitive display is further operable to use the row buffer amplifier as a signal source in a pressure point detection configuration. See, FIG. 4, page 11, lines 13-31.

Dependent claim 14 recites a display controller that uses the column buffer amplifier (311) to provide a display control signal in a display driver configuration. The touch sensitive display is further operable to use the column buffer amplifier as the sense amplifier in a pressure point detection configuration. See, FIG. 4, page 11, lines 13-31.

Dependent claim 15 recites a portable device comprising a touch sensitive display as claimed in claim 1.

Grounds of Rejection to be reviewed on Appeal

The grounds of rejection to be reviewed on appeal are the grounds stated in the Final Office Action mailed on January 7, 2010. In particular, Appellants appeal:

1. The rejection of claims 1, 2, 4, 7, 9, and 15 under 35 U.S.C. Section 103(a) as being unpatentable over Nishikawa et al., US Pat. No. 5,907,375 (Nishikawa) in view of Hioki et al., US Pat. No. 7,109,967 (Hioki) and Geaghan et al., US Pat. No. 6,133,906 (Geaghan).
2. The rejection of claim 8 under 35 U.S.C. 103(a) as being unpatentable over Nishikawa in view of Hioki, Geaghan, and Bechtle et al., US Pat. No. 6,535,091 (Bechtle).
3. The rejection of claim 10 under 35 U.S.C. 103(a) as being unpatentable over Nishikawa in view of Hioki, Geaghan and Perski et al., US Pat. No. 6,762,752 (Perski).
4. The rejection of claims 11-14 under 35 U.S.C. 103(a) as being unpatentable over Nishikawa in view of Hioki, Geaghan, Perski and Appellants' Admitted Prior Art (AAPA).

Appellants request reversal of the grounds for each and every rejection of pending claims for at least the reasons set forth herein below.

Argument

Appellants request reversal of the final rejection of presently pending claims 1, 2, 4 and 7-15 (provided in the Claims Appendix attached hereto) since the combined teachings of the cited references do not disclose each of the recited elements of at least claim 1 – namely recited claim elements referred to collectively herein as "dual purpose buffers." In the absence of a teaching of the claimed "dual purpose buffers" in the cited prior art references, the Final Office Action has not established a *prima facie* case of obviousness with regard to claim 1 (and each of the presently pending claims that depend from claim 1). The current final rejection of each of the presently pending claims should therefore be reversed.

1. Rejection of claims 1, 2, 4, 7, 9, and 15 as obvious over Nishikawa in view of Hioki and Geaghan

Claims 1, 2, 4, 9 and 15

Appellants request reversal of the rejection of independent claim 1 since the combined teachings of Nishikawa, Hioki and Geaghan do not disclose each recited element of claim 1. In particular, none of the references discloses or even remotely suggests the elements recited in claim 1 referred to collectively herein as "dual purpose buffers."

a. The Claimed Invention

Presently pending/appealed independent claim 1 is directed to a touch sensitive display comprising an active matrix display element having a viewer proximal side and a viewer distal side and comprising a pixel array with rows and columns of pixels. A touch sensitive element is disposed on the viewer distal side of the active matrix display element and comprises a first conductive layer with a first plurality of conductors and a second conductive layer with a second plurality of conductors. The touch sensitive element further comprises a pressure sensitive layer sandwiched between the first conductive layer and the second conductive layer and operable to modify an electrical conductivity between a first conductor of the first plurality of conductors and a second conductor of the second plurality of conductors in response to a pressure point resulting from an applied pressure. The first plurality of conductors are row conductors of the touch sensitive element and the second plurality of conductors are column conductors of the touch sensitive element.

Claim 1 furthermore recites "*dual purpose buffers*." In particular, claim 1 recites that each row of pixels shares a respective row buffer amplifier with a touch sensitive element row conductor, and each column of pixels shares a respective column buffer amplifier with a touch sensitive element column conductor.

b. *The Absence of the Claimed "Dual Purpose Buffers" in the cited prior art*

Appellants request reversal of the Final Office Action's obviousness-based rejection of independent claim 1 for at least the reason that the cited prior art references do not disclose the claimed *dual purpose buffers* recited in independent claim 1 and incorporated into each of the presently pending dependent claims.

Claim 1 explicitly recites that each row of pixels *shares* a respective row buffer amplifier with a touch sensitive element row conductor, and each column of pixels shares a respective column buffer amplifier with a touch sensitive element column conductor. See, e.g., Appellants' application drawing FIG. 4 and specification at page 10, line 26 to page 11, line 31.

The primary reference, Nishikawa, discloses a device including a display *overlying* a touch sensitive input device. In contrast to Appellants' claimed invention, FIG. 7 of Nishikawa unequivocally discloses a *separate* LCD driver 63 and touch sensor driver 61, 62 (having separate buffers). Nishikawa neither discloses nor suggests row-by-row or column-by-column sharing of buffers for BOTH DISPLAY AND TOUCH SENSOR FUNCTIONALITIES. Nowhere does Nishikawa disclose or even remotely suggest Appellants' claimed *single buffer that is used for both display and touch sensor functionalities*.

Hioki merely teaches the use of an active matrix display and discloses nothing of particular relevance regarding Appellants' claimed "dual purpose buffers."

Geaghan discloses a device with a display overlaying a touch system, but the *electrical control of the display and the touch system work fully independent of one another*.

Thus, the prior art does not provide any express teaching or reason to modify Nishikawa's separate, single purpose, buffer sets in a way that would fall within Appellants' claimed buffers having a *dual purpose of storing both image and touch sensor information*. The absence of any teaching of the dual purpose buffers (i.e., row-by-row or column-by-column sharing of buffers for BOTH DISPLAY AND TOUCH SENSOR FUNCTIONALITIES) and/or any disclosure to

modify the apparatuses disclosed in the cited references to include such structure/functionality, precludes a conclusion that Appellants' claimed invention is obvious over the cited prior art.

Appellants request reversal of the presently pending dependent claims for at least the reason that each incorporates the non-obvious elements recited in claim 1 from which each depends. The patentability of dependent claims 2, 4, 9 and 15 will not be separately argued on appeal.

Claim 7

Claim 7 enables by means of a piezoelectric material, operable to modify the electrical conductivity, gradually modifying resistance change of the pressure layer (117) as a function of the pressure. This recited element is neither disclosed nor suggested in the cited Hioki reference, and claim 7 is therefore non-obvious over the prior art for at least this additional reason. In the event this rejection is not withdrawn, Appellants request further explanation of how Hioki discloses the additionally recited elements of claim 7 discussed herein.

2. Rejection of claim 8 as obvious over Nishikawa in view of Hioki, Geaghan and Bechtle

Claim 8 depends on the new and non-obvious independent claim 1. The rejection of claim 8 should be reversed since, lacking any teaching of the "dual purpose buffers" incorporated into claim 1, there is no reason for a person skilled in the relevant art to combine the disclosures of the three cited prior art references in a way that would render the claimed invention.

3. The rejection of claim 10 as obvious over Nishikawa in view of Hioki, Geaghan and Perski

Claim 10 depends on non-obvious independent claim 1. The rejection of claim 10 should be reversed since, lacking any teaching of the "dual purpose buffers" incorporated into claim 1, there is no reason for a person skilled in the relevant art to combine the disclosures of the three cited prior art references in a way that would render the claimed invention.

4. Rejection of claims 11-14 as obvious over Nishikawa in view of Hioki, Geaghan, Perski and AAPA

Claims 11-14 depend from claim 9 which, in turn, depends on non-obvious claim 1. This is especially the case for claims 13 and 14 that relate specifically to row-by-row (claim 13) and column-by-column (claim 14) sharing of buffer amplifiers for BOTH DISPLAY AND TOUCH SENSOR FUNCTIONALITIES as recited in the above discussed independent claim 1. The rejection of claims 11-14 should be reversed since, lacking any teaching of the "dual purpose buffers" incorporated into claim 1, there is no reason for a person skilled in the relevant art to combine the disclosures of the four cited prior art references and AAPA in a way that would render the claimed invention.

Conclusion

The cited prior art neither discloses nor suggests the "*dual purpose buffers*" elements recited in Appellants' presently pending independent claim 1 (and each of the presently pending dependent claims. The Final Office Action from which this appeal was taken therefore does not set forth a proper *prima facie* case for the current obviousness rejection. For at least this reason, Appellants request reversal of the final rejection of claims 1, 2, 4 and 7-15.

Respectfully submitted,



Mark Joy, Reg. No. 35,562
LEYDIG, VOIT & MAYER, LTD.
Two Prudential Plaza
180 North Stetson Ave., Suite 4900
Chicago, Illinois 60601-6731
(312) 616-5600 (telephone)
(312) 616-5700 (facsimile)

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Claims Appendix

1. (Previously presented) A touch sensitive display comprising:

an active matrix display element having a viewer proximal side and a viewer distal side and comprising a pixel array with rows and columns of pixels; and

a touch sensitive element disposed on the viewer distal side of the active matrix display element, wherein the touch sensitive element comprises:

a first conductive layer comprising a first plurality of conductors;

a second conductive layer comprising a second plurality of conductors; and

a pressure sensitive layer sandwiched between the first conductive layer and the second conductive layer and operable to modify an electrical conductivity between a first conductor of the first plurality of conductors and a second conductor of the second plurality of conductors in response to a pressure point resulting from an applied pressure, characterized in that:

the first plurality of conductors are row conductors of the touch sensitive element and the second plurality of conductors are column conductors of the touch sensitive element,

each row of pixels shares a respective row buffer amplifier with a touch sensitive element row conductor, and

each column of pixels shares a respective column buffer amplifier with a touch sensitive element column conductor.

2. (Previously presented) A touch sensitive display as claimed in claim 1 wherein the touch sensitive element comprises a plurality of pressure sensitive elements.

3. (Canceled)

4. (Previously presented) A touch sensitive display as claimed in claim 2 wherein the plurality of pressure sensitive elements is aligned with pixels of the active matrix display element.

5. (Canceled)

6. (Canceled)

7. (Previously presented) A touch sensitive display as claimed in claim 1 wherein the pressure sensitive layer comprises a piezoelectric material operable to modify the electrical conductivity.

8. (Previously presented) A touch sensitive display as claimed in claim 1 wherein the pressure sensitive layer comprises Micro-ElectroMechanical (MEM) switches operable to modify the electrical conductivity.

9. (Previously presented) A touch sensitive display as claimed in claim 1, further comprising detection means operable to determine a position of the pressure point in response to the change in electrical conductivity between the first conductor and the second conductor.

10. (Original) A touch sensitive display as claimed in claim 9 wherein the detection means is operable to detect a plurality of simultaneous pressure points.

11. (Previously presented) A touch sensitive display as claimed in claim 10 wherein the detection means comprise a signal source for outputting a signal on the first conductor and a sense amplifier coupled to the second conductor for detecting an electrical signal caused by an electrical conductivity being formed between the first conductor and the second conductor in response to the pressure point.

12. (Previously presented) A touch sensitive display as claimed in claim 11 wherein the electrical signal is an electrical charge and the sense amplifier is a charge sensitive amplifier.

13. (Previously presented) A touch sensitive display as claimed in claim 11 further comprising a display controller, wherein the display controller uses the row buffer amplifier to provide a display control signal in a display driver configuration, and wherein the touch sensitive display is further operable to use the row buffer amplifier as a signal source in a pressure point detection configuration.

14. (Previously presented) A touch sensitive display as claimed in claim 11 further comprising a display controller, wherein the display controller uses the column buffer amplifier to provide a display control signal in a display driver configuration, and wherein the touch sensitive display is further operable to use the column buffer amplifier as the sense amplifier in a pressure point detection configuration.

15. (Original) A portable device comprising a touch sensitive display as claimed in claim 1.

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Evidence Appendix

Not Applicable

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Related Proceedings Appendix

Not Applicable